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EXAMINER
ZHENG, LI

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/678,490	LYDIATE ET AL.	
	Examiner	Art Unit	
	LI ZHENG	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10 and 14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/14/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response filed 3/25/10 as well as a supplemental response filed on 6/1/10 are acknowledged.

As a result, claims 1-8, 10 and 14 are pending examined on the merits.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6, 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabijanski et al. (U.S. Patent No. 6,753,460).

The instant claims are drawn to a plant selection strategy method of selecting for a plant or portion thereof that comprises a coding region of interest, the method comprising,i) providing a plant, or portion thereof comprising a first nucleotide sequence comprising: a first regulatory region in operative association with a first coding region, and an operator sequence, the first coding region encoding a tag protein, wherein expression of the first nucleotide sequence is benign to the plant or portion thereof;

ii) introducing a second nucleotide sequence into the plant, or portion thereof to produce a dual transgenic plant, the second nucleotide sequence comprising, a second regulatory region in operative association with a second coding region, and a third regulatory region in operative association with a third coding region, the second coding region comprising a coding region of interest, the third coding region encoding a repressor capable of binding to the operator sequence thereby inhibiting expression of the first coding region; and iii) selecting for the dual transgenic plant by identifying plants, or portions thereof which:(a) are deficient in the tag protein;(b) are deficient in expression of the first coding region; or (c) have an identifiable genotype or phenotype of the dual transgenic plant associated with being deficient in the tag protein or deficient in expression of the first coding and wherein the plant selection strategy method confers no adaptive advantage, is benign to the plant or portion thereof, and is not based on antibiotic resistance.

Fabijanski et al. teach DNA constructs of Figure 3, wherein locus 2 (corresponding to first nucleotide sequence in the instant claims) containing a lethal gene (corresponding to tag gene) under the control of a modified repressible promoter,Pro2 (corresponding to first regulatory region), and wherein locus 1 (corresponding to second nucleotide sequence in the instant claims) containing a repressor gene, repressor 2 (corresponding third coding region) under the control of a modified repressible promoter,Pro1 (corresponding to third regulatory region) and new trait gene expression cassette (corresponding to second coding and regulatory regions). Fabijanski et al.further teach selecting the dual transgenic plant by PCR for the

presence of the repressible lethal gene and the repressor (the paragraph bridging columns 33-34).

Fabijanski et al. did not teach in Figure 3 that expression of the first nucleotide sequence is benign to the plant or that the repressor and operator sequence are Tet repressor and Tet operator.

However, Fabijanski et al. further teach that the repressible promoter containing three copies of tet operator sequence can be used as operator (Col. 30 lines 33-58 and Col. 32, lines 34-45) and methoxinine dehydrogenase gene (Column 4, lines 55-61). In Example 3, Fabijanski et al. teach a combination of oncogene1 and oncogene 2 can be used to practice the invention. Both methoxinine dehydrogenase gene and oncogene 1 are benign to the plant.

It would have been obvious and within the scope for a person with ordinary skill in the art to modify the method of in Figure 3 of Fabijanski et al. by using the oncogene1 and oncogene 2 system as lethal gene, resulting in instant invention. One would have been motivated to do that given the teaching of Fabijanski et al. that invention also provides a conditionally lethal phenotype when oncogene 1 and 2 are used to practice the invention (column 27, lines 30-35). It would also have been obvious to use methoxinine dehydrogenase gene to practice the invention given the teaching of Fabijanski et al. that the present invention is not limited by using oncogene and that a variety of genes which confer lethal and conditional lethal phenotype can be employed within the scope of the invention.

Applicants traverse in the paper filed 3/25/10 and 6/1/10. Applicants' arguments have been fully considered but were not found persuasive.

Applicants argue that expression of the first nucleotide sequence containing the first coding region encoding a repressible tag protein is not benign to the plant, but instead results in a non-viable plant (response filed 3/25/10, page 12, 4th paragraph to page 3, 2nd paragraph).

The Office contends that although the Figure 3 of Fabijanski et al. teach lethal gene, according Example 5 of Fabijanski et al. the lethal genes includes conditional lethal gene such as oncogene 1 and 2 as a selection marker (Example 5, columns 33-35; also Table 1) which is similar to the conditionally lethal gene, iaaH, as disclosed in Example 5 of the instant specification. In addition, Fabijanski et al. also teach that other conditionally lethal genes can also be used (the paragraph bridging columns 4-5 and column 5 lines 15-31) including methoxinine dehydrogenase gene as in instant claim 5 (Column 4, lines 55-61). Further still, Fabijanski et al. teach that the invention is not limited by using oncogene and that a variety of genes which confer lethal and conditional lethal phenotype can be employed within the scope of the invention. Fabijanski et al. further point out that any gene which is capable of inhibiting proper functioning and/or growth a development of a plant cell is considered to be a lethal gene (the paragraph bridging columns 27-28). The lethal gene shown in Figure 3 of Fabijanski et al. includes conditional lethal genes such as oncogene 1 and 2 system and methoxinine dehydrogenase gene. Therefore, a selection strategy that is benign

and confers no adaptive advantage to the plant is seen obvious over the teaching of Fabijanski et al.

Applicants argue that there is no reference to oncogene 1 and 2 in Example 5 or Table 1 of Fabijanski et al. and that other conditionally lethal genes referred by the Examiner is given in the background section of the application (response filed 3/25/10, page 3, 4th paragraph to page 4, 4th paragraph) .

The Office contends that oncogene 1 and 2 are taught in Example 3 by Fabijanski et al. (column 32, lines 6-15). Further, it would be obvious for a person skilled in the art to use other conditionally lethal genes disclosed in any part of the specification including methoxinine dehydrogenase gene disclosed in column 4, lines 55-61.

Applicants further argue that Oncogene 1 and oncogene 2 do not work same way as conditionally lethal gene, iaaH as disclosed in Example 5 of the present application because for iaaH gene, plant is sensitized to exposure to non-toxic IAM or NAM whereas combined expression of these genes is lethal to the plant (response filed 3/25/10, page 5, 2nd paragraph). Applicants further conclude that the combined the teachings do not teach a tag protein that is benign to the plant therefore do not lead to the claimed invention (response filed 3/25/10, the paragraph bridging pages 5-6).

The Office contends that Oncogene 1 and oncogene 2 do not have to work exact same way as conditionally lethal gene, iaaH. For Oncogene 1 and oncogene 2 system, expressing oncogene1 (a tag gene) is benign to plant. The plant is sensitized to non-toxic substrate tetracycline. Therefore, oncogene 1 and oncogene 2 system of Fabijanski et al. is a conditional lethal gene system. Still further, other conditional lethal

gene such as methoxinine dehydrogenase gene as taught by Fabijanski et al. can also be used. Therefore, the Office concludes that combined teachings teach all the limitations set forth by the claims.

Applicants further argue that Fabijanski et al. provide a method to contain the spread of DNA between plant and the method of Fabijanski et al. positively select plants that do not comprise the desired genetic compliment and that the other conditional lethal gene disclosed by Fabijanski et al. is not desired for this purpose (response filed 6/1/10, page 2, 2nd paragraph).

The Office contends that Fabijanski et al. may teach a method for a different purpose, however, the combined teaching teach all the steps set forth for the instant invention.

3. Claims 1-8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabijanski et al. (U.S. Patent No. 6,753,460) as for claims 1-6, 8 an 14, in view of Chou et al. (1998, *PNAS* 95:5293-5298).

Claims 1-6, 8 an 14 are discussed above.

Claim 14 further contains a limitation of Ros repressor and Ros operator.

The teaching of Fabijanski et al. is discussed above.

Fabijanski et al. did not teach Ros repressor, Ros operator,

Chou et al. teach the zinc finger gene from Agrobacterium, Ros, and repression of the virC/D and ipt genes by binding of Ros to the conserved operator, “ros box”

(abstract; page 5293, the paragraph bridging the left column and the right column; page 5296, Figure 4)

It would have been obvious for a person with ordinary skill in the art to modify the method of Fabijanski et al. by replacing the tet operator and repressor with the Ros operator and repressor of Chou et al. One would have been motivated to do so given the teaching of Chou et al. that Ros protein repress the expression of virC/D and ipt genes by binding to the conserved operator, "ros box" (abstract; page 5293, the paragraph bridging the left column and the right column; page 5296, Figure 4), similar to other repressors from bacteria, such as tet. It would have been desirable to get various repressible promoters controlled by different genes.

4. Claims 1-6, 8, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabijanski et al. (U.S. Patent No. 6,753,460) as for claims 1-6, 8 and 14 in view of Mason et al. (1992, *PNAS* 89:11745-11749).

Claims 1-6, 8 an 14 are discussed above.

Claim 10 further contains a limitation that the coding region of interest encodes an antigen.

The teaching of Fabijanski et al. is discussed above.

Fabijanski et al. did not teach expression of gene of interest listed in instant claim 10.

Mason et al. teach transgenic tobacco plants expressing the hepatitis B surface antigen under the control of CaMV 35S promoter (abstract; Figure 1).

It would have been obvious and within the scope for a person with ordinary skill in the art to modify the method of Fabijanski et al. by using the expression cassette of Mason et al. as a new trait in construct containing locus1 of Fabijanski et al. One would have been motivated to do so given the teaching of Mason et al. that hepatitis B surface antigen could be used as a vaccine against hepatitis B virus infection.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-8, 10 and 14 remain rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11 of US Patent Number 7,521,595 in view Mason et al. (1992, *PNAS* 89:11745-11749). Although the conflicting claims are not identical, they are not patentably distinct from each other because the US Patent Number 7,521,595 teach a transgenic plant comprising two constructs into a transgenic plant: a) a first construct comprising a first regulatory region operatively linked to a gene of interest and one or more Ros operator sequence; b) a second construct comprising a second regulatory region operably linked to Ros repressor gene, wherein the gene of interest in the first construct comprises a conditional lethal gene, indole acetamide hydrolase, which is capable of being identified in a plant as a tag protein (page 20, lines 1-2).

The claim of US Patent Number 7,521,595 do not teach expression of another gene of interest or pharmaceutically active protein or any of the proteins listed in claim 10 in the second construct.

Mason et al. teach transgenic tobacco plants expressing the hepatitis B surface antigene under the control of CaMV 35S promoter (abstract; Figure 1).

It would have been obvious to add the expression cassette of Mason et al. to the second construct, resulting in the instantly claimed invention. One would have been motivated to do so given the teaching of Mason et al. that hepatitis B surface antigen could be used as a vaccine against hepatitis B virus infection.

Applicants traverse in the paper filed 3/25/10, Applicants' arguments have been fully considered but were not found persuasive.

Applicants argue that in the construct of present invention, the gene of interest is located on the second construct whereas the construct of US Patent Number 7,521,595 contain gene of interest in the first construct (response, the paragraph bridging pages 15-16).

The Office contends that that claim 11 of US Patent Number 7,521,595 is directed to a plant and that a method claim is not an obvious variation of a plant claim (response, page 6, 4th paragraph).

The Office contends that in view of the plant of claim 11 of US Patent Number 7,521,595, it would have been obvious for a person skilled in the art to use the method of instant invention to produce such plant.

Summary

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li Zheng whose telephone number is 571-272-8031. The examiner can normally be reached on Monday through Friday 9:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on 571-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Li Zheng/
Examiner, Art Unit 1638